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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/506,429	09/02/2004	Tsutomu Furuzono	1035-526	1242

23117 7590 08/29/2007  
NIXON & VANDERHYE, PC  
901 NORTH GLEBE ROAD, 11TH FLOOR  
ARLINGTON, VA 22203

EXAMINER
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PENG, KUO LIANG

ART UNIT	PAPER NUMBER
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1712

MAIL DATE	DELIVERY MODE
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08/29/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/506,429

Applicant(s)

FURUZONO ET AL.

Examiner

Kuo-Liang Peng

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 7/5/07 Response.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9, 11 and 13-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-8 and 18 is/are allowed.
- 6) ☒ Claim(s) 9, 11, 13-17, 19 and 20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

1. The Applicants' response filed June 5, 2007 is acknowledged. Claims 10 and 12 are deleted. Now, Claims 1-9, 11 and 13-20 are pending.
2. The text of those sections of Title 35, U.S. code not included in this action can be found in prior Office Action(s).

#### ***Claim Rejections - 35 USC § 102***

3. Rejection of Claims 9, 11, 13-17 and 19-20 under 35 USC 102(b) as being anticipated by JP511 (JP 2001-172511) as evidenced by Sato (US 4 276 135) is maintained because the rejection is adequately set forth in paragraph 4 of Paper No. 041407. Applicant's arguments have been fully considered but they are not persuasive. The focus argument related to the core patentability is discussed below.

For Applicants' argument (Remarks, page 7, 3<sup>rd</sup> to 4<sup>th</sup> paragraphs), Examiner disagrees because of the following reason: As mentioned in the previous Office action, JP511 discloses a hydroxyapatite complex prepared by a manufacturing method where a hydroxyapatite sintered compact is bonded to a polymer via

amide, urea, urethane linkages, etc. The urea or urethane linkages can be derived from a reaction between an isocyanate functional group and an amino or hydroxyl group. ([0011]-[0013], [0016], [0023], [0037] and [0043]) The hydroxyapatite can contain an amino group by treated with a silane coupling agent such as KBE903. ([0043] and [0049]) In addition, Sato teaches that KBE903 is **3-aminopropyl triethoxysilane**. As such, the 3-aminopropyltriethoxysilane-modified hydroxyapatite possessing an amino functional group can be portrayed as hydroxyapatite-O-Si(CH<sub>2</sub>)<sub>3</sub>-NH<sub>2</sub> (for simplicity, only one of the reacted ethoxy groups in the coupling agent is shown). Upon reacting with the active groups on the polymer, the final product can be envisaged as:

Hydroxyapatite-O-Si(CH<sub>2</sub>)<sub>3</sub>-X-Polymer where X can be an amide, a urea or a urethane linkage, etc. As such, in the **resulting product**, the hydroxyapatite is **directly** bonded to the **alkoxysilyl group** of the polymer-based material. Whether the moiety (C<sub>2</sub>H<sub>5</sub>O)<sub>3</sub>Si(CH<sub>2</sub>)<sub>3</sub>-X- is present in the polymer before the reaction or not is **irrelevant** because the instant claims are **product-by-process** claims. The instant claims are directed to a hydroxyapatite complex derived from an alkoxysilyl group-modified polymer and a hydroxyapatite; while JP511 discloses a hydroxyapatite complex derived from a -O-Si- group-modified hydroxyapatite and a polymer.

For Applicants' argument (Remarks, page 7, last paragraph and page 8, 1<sup>st</sup> paragraph), the aforementioned final product, Hydroxyapatite-**O-Si(CH<sub>2</sub>)<sub>3</sub>-X-Polymer** (for simplicity, only one of the reacted ethoxy groups in the coupling agent is shown) is essentially the same as the structure recited in Claims 19 and 20. Applicants are reminded that the instant claims are **product-by-process** claims because the instant claims are directed to a hydroxyapatite complex derived from an alkoxysilyl group-modified polymer and a hydroxyapatite; while JP511 discloses a hydroxyapatite complex derived from a -O-Si- group-modified hydroxyapatite and a polymer.

4. Rejection of Claims 9, 11 and 19-20 under 35 USC 102(b) as being anticipated by Hino (US 5 814 681) and rejection of Claims 13-17 under 35 USC 103(a) as being unpatentable over Hino are maintained because the rejections are adequately set forth in paragraphs 5-6 of Paper No. 041407. Applicant's arguments have been fully considered but they are not persuasive. The focus argument related to the core patentability is discussed below.

For Applicants' argument (Remarks, page 8, 5<sup>th</sup> paragraph to page 10, 2<sup>nd</sup> paragraph), Examiner's position is similar to that set forth above, i.e., the structures

of the hydroxyapatite complex disclosed in the prior art read on that of the instant claims despite the fact that the processes for making the complexes are different.


5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kuo-Liang Peng whose telephone number is (571) 272-1091. The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski, can be reached on

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(571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

klp  
August 28, 2007

  
Kuo-Liang Peng  
Primary Examiner  
Art Unit 1712